AKSENOV, V., inzh.

Electric lock for magnetic starters. Stroitel' no.6:15 Je '59.
(MIRA 12:9)

(Electric cutouts)

AKSENOV, V., inzh.

New cutting head for finishing moulded products. Stroitel' no.1:13 Ja '59. (MIRA 12:3)

(Planing machines)

AKSENOV, V.

Concerning the design of a controlling rectifier with consideration of the effect of phase overlap. Elektrosviaz' 16 no.5:76 My '62. (MIRA 15:5)

(Electric current rectifiers)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000100720008-3"

ZHERDIN, M., kand.tekhn.nauk; AKSENOV, V. [Aks'onov, V.], kand.tekhn.nauk; NINIDZE, K., gornyy inzh.; DUKHOVNYY, S., gornyy inzh.

Pay more attention to the extraction of building materials in the republic. Bud. mat. i konstr. 4 no.1:9-13 Ja-F '62. (MIRA 15:7)
(Ukraine—Quarries and quarrying)

AKSENOV, V., zerzhant

While teaching, I train. Starsh.-serzh. no.6:14-15 Je '62.
(MIRA 15:7)
(Military education)

S/112/59/000/013/048/067
A002/A001

9.4300

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1959, No. 13, p. 227, # 27797

AUTHOR: Aksenov, V.A.

21

TITLE: Investigation of the Introduction of Holes in n-type Germanium by a Pulse Method

PERIODICAL: Sb. statey nauchn. stud. o-va Mosk. energ. in-ta, 1957, No. 10, pp. 12-20

TEXT: A conventional pulse method of measuring the lifetime and mobility of charge carriers is discussed and an experimental apparatus is described.

B

Translator's note: This is the full translation of the original Russian abstract.

Card 1/1

S/089/62/013/003/004/007
B102/B104

AUTHORS: Aksenov, ~~V. A.~~, Brodkin, E. B., Bushuyev, A. V., Polikarpov, V. I.

TITLE: Cs^{139} gamma radiation

PERIODICAL: Atomnaya energiya, v. 13, no. 3, 1962, 271-274

TEXT: No detailed data for the gamma radiation spectrum of Cs^{139} being available apart from those of Perkins and King (Nucl. Sci. and Engng. VII, 3, 1958), exact measurements were made, and some new lines discovered. The isotope was separated from the decay products of Kr and X contained in the gas channel of a research reactor by means of an aerosol filter. A scintillation spectrometer was used for studying the γ-spectrum, while NaI(Tl) and CsI(Tl) crystals with ФЭУ-13 (FEU-13) photomultipliers were used as detectors. The pulses from these were fed into a 100-channel pulse-height analyzer. At E = 0.661 Mev (Cs^{137}) the energy resolution was 9.5% and the non-linearity 1%. The background produced by the Cs^{138} spectrum was measured, giving results in good agreement with the data of Strominger et al. (Rev. Mod. Phys. 30, no. 2, part II, 1958). The Cs^{138}

Card 1/2

KLINKOVSHTEYN, G.I., kand. tekhn. nauk,; AKSENOV, V.A., inzh.; SARKIS'YANTS, E.G., inzh.; SHUMOV, A.V., inzh.; MANUSADZHYANTS, Zh.G., inzh.; TROSHINA, M.Ya., inzh.; STETSYUK, L.S., inzh.; PARSHIN, M.A., inzh.; KARPINSKAYA, I.M., inzh.; FAL'KEVICH, B.S., doktor tekhn. nauk; ILARIONOV, V.A., kand. tekhn. nauk; POLTEV, M.K., inzh.; KOGAN, E.I., inzh.; CHIGARKO, G.T., inzh.; KONONOVA, V.S., red.

[Traffic safety and safety measures in automotive transportation] Bezopasnost' dvizheniia i tekhnika bezopasnosti na avtomobil'nom transporte. Moskva, Transport, 1964. 74 p. (MIRA 18:1)

1. Moscow. Gosudarstvennyy nauchno-issledovatel'skiy institut avtomobil'nogo transporta. 2. Moskovskiy avtomekhanicheskiy institut (for Fal'kevich). 3. Moskovskiy avtomobil'no-dorozhnyy institut imeni Molotova (for Ilarionov). 4. Vsesoyuznyy zaochnyy politekhnicheskiy institut (for Poltev).

MYNKIN, A.Ye.; GONCHAROV, T.K., elektromekhanik; AKSENOV, V.D.

Semiconductor converters for supplying telecommunication apparatus. Avtom., telem. i sviaz' 2 no.10:25-28 O '58. (MIRA 11:10)

1. Nachal'nik laboratorii signalizatsii i svyazi Yugo-Vostochnoy dorogi (for Mynkin). 2. Nachal'nik otdela svyazi Yugo-Vostochnoy dorogi (for Aksenov).
(Electric current converters)

MYNKIN, A.Ye.; GONCHAROV, T.K., elektromekhanik; AKSENOV, V.D.

Modernizing low-power rectifiers. Avtom.telem. i sviaz' 3 no.12:24-25 D '59. (MIRA 13:4)

1. Nachal'nik laboratorii signalizatsii svyazi Yugo-Vostochnoy dorogi (for Mynkin). 2. Nachal'nik otdela svyazi Yugo-Vostochnoy dorogi (for Aksenov).
(Electric current rectifiers)

AKSENOV, V.F., starshiy inzhener.

From the memory of the engineer in charge of the Novorossiysk electric power plant. Elektrichestvo no.12:68-69 D '53. (MLRA 6:11)

1. Tekhotdel V/O Vostokzagotzerno. (Novorossiysk electric power plants)

of determining the dielectric properties of

AKSENOV, V.I.

109-1-13/18

AUTHOR: Aksenov, V.I.

TITLE: Determination of the Losses of Magneto-Dielectric Materials at Ultrahigh Frequencies (K opredeleniyu poter' magnito-dielektricheskikh materialov na sverkhvysokikh chastotakh)

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol.III, Nr 1, pp.156-157 (USSR)

ABSTRACT: Formulae for the determination of the overall losses of magneto-dielectric materials are given. The formulae are valid for the case when the losses are low. If the losses are determined experimentally by the short circuit test in a measuring waveguide section, the resultant loss tangents are expressed by Eq.(1), where parameters x and y are determined by Eqs.(2) and (3); λ and λ_g are wavelengths in the free space and in the waveguide respectively, λ_{Kp} is the critical wavelength for the waveguide, d is the thickness of the measured sample, k is the standing wave ratio, l is the distance between the surface of the magneto-dielectric sample and the first minimum of the standing wave. If the overall losses are to be determined from an open circuit test, the loss tangents are also ex-

Card 1/2

109-1-18/18

Determination of the Losses of Magneto-Dielectric Materials at Ultrahigh Frequencies

pressed by Eq.(1) but parameters x and y are given by Eqs.(5) and (6) respectively. The author expresses his gratitude to Prof. L. A. Zhekulin for his valuable advice. There are 2 English and 3 Russian references.

SUBMITTED: March 13, 1957

AVAILABLE: Library of Congress

Card 2/2

SOV-109-3-4-1/28

AUTHOR: Aksenov, V. I.

TITLE: Scattering of Electromagnetic Waves from Sinusoidal and Trochoidal Surfaces having Finite Conductivity (O rasseyanii elektromagnitnykh voln na sinusoidal'nykh i trokhoidal'nykh poverkhnostyakh s konechnoy provodimost'yu)

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol 3, Nr 4, pp 459-466 (USSR)

ABSTRACT: The scattering of electromagnetic waves from a limited area of an irregular surface is considered. The surface is assumed to be rectangular, and has dimensions d and ℓ. For the purpose of analysis, the rectangular system of co-ordinates x, y, z is chosen in such a manner that its origin coincides with the centre of the "illuminated" area and the axes x and y are parallel to the sides d and ℓ of the rectangle. The irregularity of the surface is described by a periodic function $Z = Z(x)$, having a period Λ. The dimensions d and ℓ are assumed to be much greater than the wave length λ of the incident radiation and d is also greater than the periodicity Λ of the surface. It is further assumed that the electrical properties of the scattering surface can be described by a complex permeability μ and a complex permittivity ε^*. The

Card 1/5

SOV-109-3-4-1/28

Scattering of Electromagnetic Waves from Sinusoidal and Trochoidal Surfaces having Finite Conductivity.

incident wave impinging on the surface is monochromatic and its wave vector $\vec{K}_0$ lies in the plane xz . The problem consists of determining the scattered field at a point P situated at a distance R from the origin of the coordinates (see the figure on p 460). It is assumed that R is comparatively large. The scattered field at a large distance from the origin can be expressed by the complex Kirchhof integral:

$$\vec{E}(P) = -\frac{j\omega\mu_0}{4\pi}\frac{e^{-jkR}}{R}\int_S\left\{[\vec{n}\vec{H}] - \vec{R}_1([\vec{n}\vec{H}]\vec{R}_1) + \sqrt{\frac{\varepsilon_0}{\mu_0}}[[\vec{E}\vec{n}]\vec{R}_1]\right\}e^{j\vec{k}\rho\vec{R}}dS \quad (1)$$

where $\vec{n}$ is the unit vector of the internal normal to the surface; $\vec{E}$, $\vec{H}$ are the values of the field at the

Card 2/5

SOV-109-3-4-1/28

Scattering of Electromagnetic Waves from Sinusoidal and Trochoidal Surfaces having Finite Conductivity

surface, $\vec{\rho} = \vec{i}x + \vec{j}y + \vec{k}Z(x)$ is a vector drawn from the origin of the co-ordinates to a surface element dS; $\vec{R}_1 = \vec{i} \sin \alpha + \vec{k} \cos \alpha$ is a unit vector directed from the origin of the co-ordinates to point P . Integration of Eq(1) is carried out over the whole "illuminated" area. If the incident wave is vertically polarised, its field components can be expressed by Eqs(5) from which it follows that the solution of Eq(1) is in the form of Eq(6), where $p = \sqrt{\frac{\mu^*}{\varepsilon^*}}$. In a horizontally polarised incident wave, having components expressed by Eq(7), the scattered field is expressed by Eq(8). Eqs(6) and (8) are the basic expressions for the evaluation of the scattered fields. If it is assumed that the scattering surface is described by $Z(x) = -a \cos Kx$, where a is the "undulation" amplitude and $K = 2\pi/\Lambda$, the scattered field of a vertically polarised wave is expressed by Eq(10), where $\xi = Kx$, and β and γ are expressed by Eqs(11) and (12); if (ξ) is a periodic function expressed by Eq(13) which can be expanded

Card 3/5

SOV-109-3-4-1/28

Scattering of Electromagnetic Waves from Sinusoidal and Trochoidal Surfaces having Finite Conductivity

into the Fourier series, as shown by Eq(14). The second part of the integral in Eq(10)can be expanded into a Bessel function series as given by Eq(15), from which the integral can be written in the form of Eq(16). The solution of the integral is given by Eq(18). For a horizontally polarised wave, the periodic function of the integral of Eq(8) is represented by Eq(19), whose solution is given by Eq(21). For a trochoidal surface which is described by Eqs(23), the scattered field from a vertically polarised wave is expressed by Eq(25). The solution of these is in the form of Eq(28). A similar solution can be found for a horizontally polarised incident wave; the periodic function to be expanded into the Fourier series is in the form of Eq(28). The above theoretical formulæ, in particular, Eqs. (17), (21), (27) and (28) can be used to evaluate the amplitudes of the scattered waves for the surfaces having a finite conductivity. A numerical example of such a calculation is given for a sinusoidal surface having the following

Card 4/5

SOV-109-3-4-1/28

Scattering of Electromagnetic Waves from Sinusoidal and Trochoidal Surfaces having Finite Conductivity

characteristic parameters: $\Lambda/a = 10$, $\Lambda/\lambda = 3.75$ and $p = 0.2 + j0.05$. The author expresses his deep gratitude to Prof. L. A. Zhekulin for his constant attention and help. There is 1 figure and 5 references, 1 of which is English and 4 Soviet.

SUBMITTED: July 25, 1957

1. Electromagnetic waves--Scattering 2. Electromagnetic waves--Theory 3. Surfaces--Electrical properties 4. Functions--Applications 5. Kirchhof integrals--Applications 6. Fourier's Series--Applications

Card 5/5

5(4)

AUTHORS: Kuznetsov, V. A., Aksenov, V. I., Klevtsova, M. P. SOV/20-128-4-35/65

TITLE: Zero Charge Potentials of Tellurium-Thallium Alloys

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 4, pp 763-766 (USSR)

ABSTRACT: The system Te-Tl was chosen because the two components - according to data by S. Karpachev and A. Stromberg (Ref 1) - have very different zero charge potentials facilitating the determination of the dependence of the zero charge potential of an alloy on its composition. The zero charge potentials were determined by investigating the electrocapillary properties of the liquid metals and alloys. The potential of the capillary electrodes was referred to an electrode of fused lead, the experimental temperature was 475°. Figure 1 shows the electrocapillary curves of the two components and their alloys. An addition of Tl (up to 25 atom%) to Te lowers the maxima σ_{max} of the electrocapillary curves. At a high content of Tl, σ_{max} increases again. Similar observations were made by A. N. Frumkin and A. V. Gorodetskaya (Ref 4)

Card 1/3

on the electrocapillary curves of Hg and Tl amalgam. They explained this phenomenon by the fact that the field of the electric double layer influences the adsorption of the alloying constituents in the surface film. Figure 2 shows the dependence of the zero charge potential on the composition of the alloy. With an increasing content of Tl, the zero charge potential shifts in the negative direction. According to A. N. Frumkin, this is explained by a varying charge of the Tl adsorbed on the surface film. θ_2 is determined - the fraction of the surface film occupied by particles of the second component (Tl). From the equation $d\sigma_{max} = - \Gamma_1 d\mu_1 - \Gamma_2 d\mu_2$ (Γ_1 = Gibbs' surface density of Te, Γ_2 = the same for Tl, μ_1, μ_2 = chemical potentials for Te and Tl), an equation is derived for $\Gamma_1 = 0$: $\Gamma_2^{(1)} = \frac{d\sigma_{max}}{d\mu_2}$.

The activity of Tl was determined by measuring the electromotive force of the concentration chain Tl/eutectic mixture LiCl +KCl + 2% by weight of TlCl/alloy Tl-Te. The measurement results are given in table 1. Figure 3 shows the dependence of $\Gamma_2^{(1)}$ on the alloy composition. A strong deviation from Raoult's law is ascertained. This suggests that the surface film consists of dipoles and is not monomolecular. Similar phenomena were observed for the Tl amalgam by A. N. Frumkin and N. S. Polyanovskaya (Ref 6). Therefore, the potential shift for mono- and bimolecular layers was computed (Table 2), the assumption of a bimolecular layer showing a better agreement with the experimental data. The computation of θ_2 confirms the assumption made by A. N. Frumkin (Ref 4) stating that the shift of the zero charge potential is directly proportional to the fraction of the surface film occupied by the metal added. There are 3 figures, 2 tables, and 7 references, 6 of which are Soviet.

ASSOCIATION: Ural'skiy gosudarstvennyy universitet im. A. M. Gor'kogo (Ural State University imeni A. M. Gor'kiy)

PRESENTED: April 13, 1959, by A. N. Frumkin, Academician

SUBMITTED: March 5, 1959

69919

24.2400

S/109/60/005/05/007/021
E140/E435

AUTHOR: Aksenov, V.I.

TITLE: Application of the Method of Variable Reactive Load to Measure the Dielectric Properties of Materials

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol 5, Nr 5, pp 771-781 (USSR)

ABSTRACT: The method employs impedance circle-diagrams to determine the dielectric parameters of non-ferromagnetic materials with medium and high losses. Nomographs are given for rapid calculation of the dielectric parameters. Acknowledgements are expressed to L.A.Zhekulin for his interest in the work and to K.P.Moiseyeva and Yu.A.Aleksandrov for calculating the nomograms. There are 9 figures, 2 tables and 6 references, 3 of which are Soviet, 2 English and 1 French.

SUBMITTED: July 30, 1959

Card 1/1

S/109/61/006/003/001/018
E032/E314

9.9000 (incl. 2205, 2305; 4160 1127)

AUTHOR: Aksenov, V.I.

TITLE: Application of the Kirchhoff Approximation to the Scattering of Electromagnetic Waves by Periodically Uneven Surfaces with a Finite Conductivity

PERIODICAL: Radiotekhnika i elektronika, 1961, Vol. 6, No. 3, pp. 347 - 354

TEXT: In a previous paper (Ref. 3) the present author used the Kirchhoff approximation to discuss the scattering of electromagnetic waves by a finite portion of a periodically uneven surface having a finite conductivity. Solutions were obtained for a surface which is periodically uneven in one direction only. In the present paper, the theory is extended to the case of a surface which is periodic in two directions. The scattering surface is given by an expression of the form $z = Z(x, y)$. It is assumed that the wave vector of the incident plane monochromatic wave and the point of observation P lie in the plane xz. At large distances from the scattering surface the field for a surface periodic

Card 1/6

30

Application of ....

in two directions is given by the following formulae:
a) vertical polarisation (electric vector of the incident wave in the xz plane)

$$\vec{E}(P) = j\frac{E_0}{\lambda}\frac{e^{-jkR}}{R}\int_S ((-\vec{i}\cos\alpha + \vec{k}\sin\alpha)[(1 + p\cos\theta)(-n_z\cos\alpha - \\ - n_x\sin\alpha + p) - pn_y^2(1 + \cos(\tau - \alpha))] - \\ - \vec{j}pn_y[n_x(\cos\tau + \cos\alpha) - n_z(\sin\tau + \sin\alpha) + p\sin(\tau - \alpha)]) \times \\ \times \frac{\cos\theta}{(1 + p\cos\theta)(\cos\theta + p)}\exp\{jk[x(\sin\tau + \sin\alpha) + Z(x,y)(\cos\tau + \cos\alpha)]\}\, dS, \qquad (1)$$

(1)

b) horizontal polarisation (electric vector perpendicular to the xz plane)

$$\vec{E}(P) = j\frac{E_0}{\lambda}\frac{e^{-jkR}}{R}\int_S \{(-\vec{i}\cos\alpha + \vec{k}\sin\alpha)\, n_y[-\sin(\tau-\alpha) + pn_z(\sin\tau + \sin\alpha) - pn_x(\cos\tau + \cos\alpha)] - \vec{j}[(\cos\theta + p)(1 - pn_x\sin\alpha - pn_z\cos\alpha) - pn_y^2(1 + \cos(\tau-\alpha))]\} \times \frac{\cos\theta}{(1 + p\cos\theta)(\cos\theta + p)} \exp\{jk[x(\sin\tau + \sin\alpha) + Z(x,y)(\cos\tau + \cos\alpha)]\}\, dS. \qquad (2)$$

In these expressions, τ and α are the angles of incidence and scattering measured from the z-axis, μ^* and ε^* are the relative complex magnetic and dielectric permeabilities of the scattering surface, $p = \sqrt{\mu^*/\varepsilon^*}$, n_x, n_y, n_z are the components of the unit vector $\vec{n}$ along the inward normal to the surface, $\vec{k}_0$ is the unit wave vector of the incident wave and $\cos\Theta = -(\vec{n}\vec{k}_0)$. The assumptions made in the derivation of the above two

Card 3/6

expressions are the same as those in Ref. 3. In particular, it is assumed that the linear dimensions of the scattering area (which was taken in the form of a rectangle with sides d and ℓ) are much greater than the wavelength λ of the incident wave and the period of the surface and that the magnetodielectric parameters satisfy the inequality $|\mu^* \varepsilon^*| \gg 1$. These formulae are then applied to the following two special cases: $Z(x, y) = -a \cos Kx \cos K'y$ (sinudoidal surface) and

$$z = \pm 4a\left[\frac{x}{\Lambda} - \left(n \mp \frac{1}{4}\right)\right],$$

$$n = 0, \pm 1, \pm 2, \ldots$$

where the upper sign is taken for

21647

Application of S/109/61/006/003/001/018
E032/E314

$\left(n - \frac{1}{2}\right)\Lambda \leqslant x \leqslant n\Lambda$ and the lower sign for $n\Lambda \leqslant x \leqslant \left(n + \frac{1}{2}\right)\Lambda$ (Sawtooth surface). The solution for the sawtooth surface is obtained in a closed form while the solution for the sinusoidal surface is obtained in the form of a rapidly converging series. The approximate solution of the problem obtained for the sinusoidal surface with a finite conductivity indicates that in the case of the sinusoidal surface the scattered field will be elliptically polarised if the incident wave is linearly polarised. The computation of the Kirchhoff integral with the aid of the Fourier expansion, which is used in the present paper, is said to be capable of extension to other cases of surfaces with finite conductivity. The results obtained for the doubly sinusoidal surface are in agreement with those of Hoffman (Ref. 4). Acknowledgments to L.A. Zhekulin, who initiated the present work.

Card 5/6

21647

Application of ....

S/109/61/006/003/001/018
E032/E314

There are 2 figures, 2 tables and 4 references: 3 Soviet and 1 non-Soviet.

SUBMITTED: July 7, 1960

Card 6/6

GOLUBTSOV, Mikhail Georgiyevich; AKSENOV, V.I., red.; YEMZHIN, V.V., tekhn. red.

[Temperature stability of narrow-band electromechanical filters] Temperaturnaia stabil'nost' uzkopolosnykh elektromekhanicheskikh fil'trov. Moskva, Gosenergoizdat, 1962. 59 p. (MIRA 15:7)

(Radio filters)

AKSENOV, V. I.

"On the Propagation of Electromagnetic Waves in a Magnetoactive Plasma at Below the Plasma Frequency"

Report presented at the Massachusetts Institute of Technology (MIT) Physical Electronics Conference. Cambridge, Massachusetts, 21-23 March 62.

L 1953-66 EWT(1) IJP(c) UR/0030/65/000/009/0088/0089

ACCESSION NR: AP5025213

AUTHOR: Aksenov, V. I. (Candidate of technical sciences)

TITLE: Fourth scientific conference on electromagnetic theory

SOURCE: AN SSSR. Vestnik, no. 9, 1965, 88-89

TOPIC TAGS: scientific conference, electromagnetic theory, plasma electromagnetics, magnetohydrodynamics, radio physics, quantum electronics, waveguide, antenna

ABSTRACT: The Conference was held from 24 to 28 May in Olsztyn, Poland. Twenty-three reports were given by Polish scientists on problems in radio physics and electronics requiring application of electromagnetic theory for their solution. K. Bocheniek and his coworkers presented mathematical papers on magnetohydrodynamic problems (conversion of electromagnetic waves to magnetohydrodynamic waves, generation and propagation of weak shock waves in magnetogasdynamics). A comparatively large number of studies were dedicated to the theoretical problems of electromagnetic theory which have arisen in connection with the development of masers and lasers. Among these were reports by Z. Puziewicz and his colleagues on the design of confocal and non-confocal Fabry-Perot resonators for lasers and masers. J. Dobosz reported on the use of the Kerr and Pockels effects for studying the modulation of infrared

Card 1/2

Card 2/2

L 1953-66
ACCESSION NR: AP5025213

and visible radiation. Several papers were devoted to the theory of waveguides and resonators partially or completely filled with anisotropic media. S. Przezdziecki reported on studies in which he obtained a strict solution to the problem of electromagnetic wave diffraction by an ideally conducting half plane perpendicular to the isolated main axis of a uniaxial anisotropic medium. S. Pogozelski presented a paper on analysis of the field radiated by an antenna with a reflector. His asymptotic solution is applicable to wavelengths which are small in comparison to the dimensions of the reflector. A report by L. Wegrowicz was dedicated to a theoretical analysis of distribution of the field in an antenna aperture as a function of requirements for the directivity pattern and scanning of the antenna. Several reports were devoted to propagation of electromagnetic waves in plasma-filled waveguides. The results of these papers may be used in designing various plasma-type SHF elements: attenuators, phase inverters, switches, valve devices, etc. [14]

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: EM, EC

NO REF SOV: 000 OTHER: 000 ATD PRESS: 4115

Card 2/2

L 1544-66 EWT(d)/EWT(1)/EEC(k)-2/ETC/EPF(n)-2/EWG(m)/FCC/EPA(w)-2/EWA(h) IJP(c)/ AT/GS/GW/WS-4

ACCESSION NR: AT5023590 UR/0000/65/000/000/0233/0234

AUTHOR: Aksenov, V. I.

TITLE: Transmission of superlow frequency electromagnetic waves through the ionospheric plasma

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva. Moscow, 1965. Issledovaniya kosmicheskogo prostranstva (Space research); trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 233-234

TOPIC TAGS: low frequency, very low frequency, extremely low frequency, longitudinal wave

ABSTRACT: A precise solution was obtained for the problem of the transmission of SLF plane electromagnetic waves through a plane layered magnetoactive ionospheric plasma for the case of longitudinal propagation (the angle between the vector of the wave normal and the direction of the external magnetic field equals zero and the magnetic field is perpendicular to the layers). Formulas were then derived for determining the reflection and transmission coefficients for extraordinary and ordinary waves. Calculations were made for reflection and transmission coefficients in a frequency range from 1.5 to 100 kcps for day and night models of the ionosphere.

Card 1/2

L 1544-66
ACCESSION NR: AT5023590

It was established that in the investigated frequency range ordinary waves practically do not penetrate through the ionosphere. The transmission coefficient for extraordinary waves through the day ionosphere at a frequency of 1.5 kcps reached 13%; with an increase in frequency its value decreased monotonically (to 1% at a frequency of 20 kcps). It was shown that electromagnetic waves at a frequency of 100 kcps practically do not transmit through the day ionosphere. The transmission coefficient of the night ionosphere, which was considerably larger than the coefficient of the day ionosphere, reached a maximum at approximately f = 4 kcps. The calculation results achieved by approximating the geometrical optics did not coincide with the precise solution of the wave equation for frequencies lower than 10 kcps, and this difference increased with the decrease of frequency. Orig. art. has: 1 figure. [JA]

ASSOCIATION: none

SUBMITTED: 02Sep65 ENCL: 00 SUB CODE:

NO REF SOV: 003 OTHER: 001 ATD PRESS: 4094

Card 2/2

ACC NR: AP6018993 SOURCE CODE: UR/0109/66/011/006/1030/1036

AUTHOR: Aksenov, V. I.
ORG: Institute of Radiotechnology and Electronics, AN SSSR (Institut radiotekhniki i elektroniki AN SSSR)

TITLE: Transmitting very-low-frequency electromagnetic waves through an ionospheric plasma /Paper presented at the All-Union Conference on the Physics of Outer Space in June 1965/

SOURCE: Radiotekhnika i elektronika, v. 11, no. 6, 1966, 1030-1036
TOPIC TAGS: signal transmission, ionosphere, electromagnetic wave propagation, magnetoactive plasma

ABSTRACT:
V. I. Aksenov has undertaken to determine accurately the coefficients of transmission and reflection of low-frequency electromagnetic waves propagating through the ionosphere. In the general case, where the transmitted wave vector makes an arbitrary and possibly variable angle with the earth's magnetic field vector, mathematical difficulties arise which have precluded solution of this problem, even when the effect of earth curvature is disregarded.

Card 1/5 UDC: 621.371.18.029.51

ACC NR: AP6018993

In practice it is an acceptable approximation to use an optical model to find transmission coefficients, provided that the following inequality is satisfied:

$$(c/\omega)\cdot(|d\bar{n}/dz|/|\bar{n}|^2)\ll 1$$

where $\bar{n}=n-j\varkappa$ is the complex index of refraction and ω is the signal frequency. However, below the VLF range this criterion is clearly not met. Calculations show that at frequencies of a few kilocycles, the left-hand side of the expression rises to the order of 1 in the ionosphere, under both day and night conditions; hence the optical model breaks down.

Aksenov therefore attempts a rigorous solution for propagation at ELF-VLF frequencies through a simplified magnetoactive ionospheric plasma. His model assumes that plasma parameters vary only in the z (vertical) direction, and that a plane wavefront signal is generated, also vertically. Effects of ionic and molecular motion are neglected. An arbitrary layer of plasma $z_0\leqslant z\leqslant z_1$ is investigated, whose lower boundary z_0 is taken to be the upper limit of free-space propagation conditions, i.e., where $\bar{n}$ ceases to be unity. Proceeding from the wave equation for propagation through the interval from z_0 to z_1, and from the expression for $\bar{n}$ in the usual terms of plasma frequency, electron gyrofrequency, and electron collision frequency, the author derives expressions

Card 2/5

ACC NR: AP6018993

for the desired transmission and reflection coefficients over the assumed interval.

The derived equations were integrated on a BESM-2 computer, assuming height intervals of 50—100 km for daytime and 80—200 km for nighttime conditions, at frequencies from 1.5 to 100 kc. The geomagnetic latitude was assumed to be 50°. Electron density and effective collision frequency as functions of altitude were taken to be as in Fig. 1, which agrees closely with the figures reported by Fligel' and others The transmission coefficient (D) for both day and night conditions could then be calculated (Fig. 2, solid lines). The broken lines in Fig. 2, obtained using the optical model, demonstrate the discrepancies at low frequencies; the optical model does not reveal, for example, the peak of D at 4 kc at night, which is in the optimum whistler mode range.

Fig. 1. Density and collision frequency

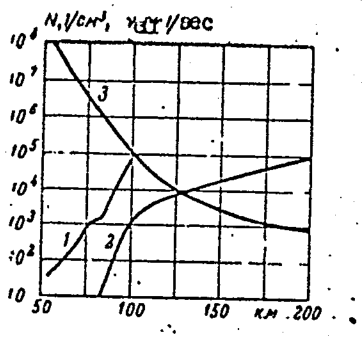
1 - Electron density, day;
2 - electron density, night;
3 - collision frequency.

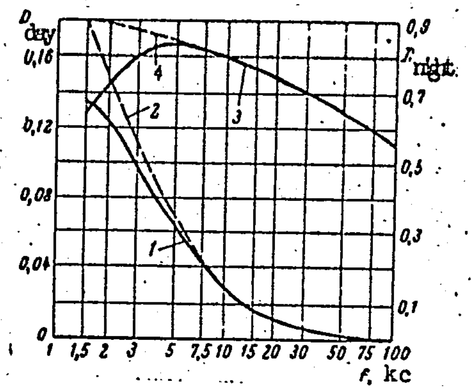
Fig. 2. Ionospheric transmission coefficients

1, 2 - Day; 3, 4 - night. Curves 2 and 4 from optical model.

Card 3/3

ACC NR: AP6018993





Aksenov emphasizes that the curves in Fig. 2 are for extraordinary waves only. Absorption of the ordinary wave component by the ionosphere is so great that it is meaningless to analyze it in the foregoing manner. Calculations show that at 1.5 kc, ordinary waves in daytime are more than 40 db down upon reaching 100 km altitude, and this factor rises rapidly with higher frequency.

Card 4/5

Calculated reflection coefficients for incident signals were also obtained, and are shown in the three curves of Fig. 3. The similarity of the three curves is apparently due to the fact that the reflective layer occurs near the lower ionosphere boundary, where there is little difference between day and night refractive behavior.

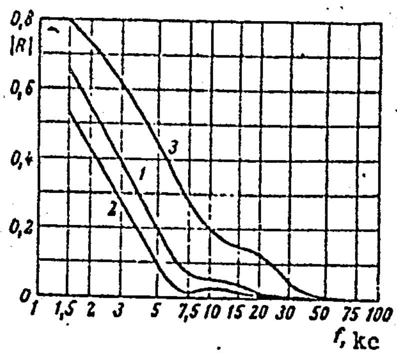


Fig. 3. Ionospheric reflection coefficients

1 - Extraordinary wave, day;
2 - extraordinary wave, night;
3 - ordinary wave, day.

In summarizing his findings, Aksenov reiterates the main point: that for signal frequencies below about 5 kc, the optical model becomes increasingly erroneous for analyzing propagation through the ionosphere.

The author thanks L. A. Zhekulin for interest in the work for valuable comments and V. D. Gus'kovaya who programmed and carrier out the calculations on the BESM-2. [FSB: v. 2, no. 8]

 SUB CODE: 20 / SUBM DATE: 31Mar65 / ORIG REF: 006 / OTH REF: 002

AKSENOV, V. I.

"Raising Boiler Drums," Elek. sta., 23, No.6, 1952

AKSENOV, V.I., inzhener; SOGOLOV, A.A., inzhener.

Preventing the rise of the small drum of the TP-170 boiler.
Elek.sta. 27 no.2:53-54 F '56. (MLRA 9:6)
(Boilers)

AKSENOV, V., kand.tekhn.nauk (Tashkent); BELEN'KIY, M., kand.tekhn.nauk [redacted](Tashkent)

Economic efficiency of using diesel locomotives for switching operations. Zhel.dor.transp.36 no.5:44-47 My '55.
(MIRA 12:5)

(Diesel locomotives)
(Railroads--Switching)

AKSENOV, V.I., kandidat tekhnicheskikh nauk.

Unused resources in the utilization of station tracks. Trudy TASHIIT no.6:50-69 '56. (MLRA 9:11)
(Railroads--Stations)

AKSENOV, V.I., kand. tekhn. nauk; NURMUKHAMEDOV, R.Z., kand. tekhn. nauk (stantsiya Smychka)

Electric locomotives used for switching. Zhel. dor. transp. 40 no. 7:70-72 Jl '58. (MIRA 11:7)

(Electric locomotives)
(Railroads--Switching)

AKSENOV, V.I., kand. tekhn. nauk

Methods for calculating the capacity of railroads. Vest. TSNII MPS 18 no.5:52-53 Ag '59. (MIRA 13:1)

1.Tashkentskiy institut inzhenerov zheleznodorozhnogo transporta. (Railroads)

AKSENOV, Vasiliy Ivanovich; DANILOV, Yuriy Vladimirovich; YEGOROV, Viktor Konstantinovich; FOMIN, Yuriy Alekseyevich; VASIL'YEVA, I., red. izd-va; SMIRNOVA, G.V., tekhn. red.

[The K-125 and K-175 motorcycles and their modifications; construction, operation and the catalog of interchangeable parts] Mototsikly K-125, K-175 i ikh modifikatsii; ustroistvo, ekspluatatsiia i katalog vzaimozameniaemykh detalei. Moskva, Mashgiz, 1962. 198 p. (MIRA 15:7)

(Motorcycles)

AKSENOV, V.I., kand.tekhn.nauk (Tashkent)

Effect of the organization system of the work of locomotives on the size of the working car fleet. Zhel.dor.transp. 46 no.6:40-42 Je '64. (MIRA 18:1)

AKSENOV, Valentin Ivanovich, kand.tekhn.nauk; ANPILOV, V.P., inzh., otv. red.; MAKHKAMOV, U., tekhn.red.

[Capacity value of the expansion of tracks on railroad lines and its potentials under the conditions of diesel and electric traction] Emkost' putevogo razvitiia zheleznykh dorog i ee rezervy v usloviiakh teplovoznoi i elektrovoznoi tiagi. Tashkent, 1960. 71 p. (Tashkent. Institut inzhenerov zheleznodozhnogo transporta. Trudy, no.13). (MIRA 15:2)

(Railroads--Management)

BEBRIS, K.D.; VERESOTSKAYA, N.V.; NOVIKOV, M.I.; AKSENOV, V.I.;
KABICHKINA, S.I.

Effect of the method of mixing on the properties of rubber made from oil-extended butadiene-styrene raw material. Kauch. i rez. 22 no.6:17-20 Je '63. (MIRA 16:7)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti.
(Rubber, Synthetic—Testing)

AKSENOV, V.K., inzh.

Effective means for preventing misfire of rectifiers. Elek. i tepl. tiaga 4 no.5:23-24 My '60. (MIRA 13:7)
(Electric railroads—Substations) (Electric current rectifiers)

AKSENOV, V. N. PA 1T19

USSR/Communications May 1947
Electronic Tubes

"Soviet High-powered Sectional Radio Tube,"
V N Aksenov, 2 pp

"Vestnik Svyazi" Vol 7, No 86

Tube uses variable 3-phase 30-volt filament current. Construction details and photos.

1T19

AKSENOV, V. N. (ENGR)

AKSENOV, V. N. (ENGR) -- "ANALYSIS AND EXPERIMENTAL INVESTIGATION OF NEW CIRCUITS FOR CONTROL AND PROTECTION OF HIGH-VOLTAGE RECTIFIERS OF POWERFUL RADIO STATIONS." SUB 30 JUN 52, MOSCOW ELECTRICAL ENGINEERING INST OF COMMUNICATIONS (DISSERTATION FOR THE DEGREE OF CANDIDATE IN TECHNICAL SCIENCES)

SO: VECHERNAYA MOSKVA, JANUARY-DECEMBER K952

AKSENOV, V.N.

TERENT'YEV, B.P., professor, doktor tekhnicheskikh nauk; AKSENOV, V.N., kandidat tekhnicheskikh nauk, dotsent

Electronic control and the protection of powerful rectifiers. Vest. sviazi 15 no.6:8-11 Je '55. (MLRA 8:7)

1. Zaveduyushchiy kafedroy radioperedayushchikh ustroystv Moskovskogo elektrotechnicheskogo instituta svyazi (for Terent'yev). 2. Vsesoyuznyy zaochnyy elektrotekhnicheskiy institut svyazi (for Aksenov)
(Radio--Rectifiers) (Electronic control)

AKSENOV, V.N.

Construction and calculation of electron-brodge/control circuits with ionic rectifiers. Elektrosviaz' 10 no.7:31-41 Jl '56. (MLRA 9:9)
(Electric current converters)

Aksenov, V. N.

POWER SUPPLIES

"Concerning the Calculation of an Adjustable Rectifier with Allowance for the Effect of Phase Overlap", by V.N. Aksenov, Elektrosvyaz', No 12, December 1957, pp 30-36.

This appears to be the first attempt to treat analytically grid-control rectifiers inductance-loaded with allowance for the sector of the phase overlap.

The author gives a procedure for his calculations in generalized coordinates of the characteristics, the short-circuit current, and the output ripple.

Tables and graphs accompany the analytic discussion.

Card 1/1

Card 1/1

AKSENOV, V. N.

V. N. Aksenov, "Use of throttle chokes to limit short circuit currents for back firing in rectifiers." Scientific Session Devoted to "Radio Day", May 1958, Trudrezervizdat, Moscow, 9 Sep 58.

It is proposed to use chokes magnetized by rectifier current under normal operating conditions to limit short circuit currents in supply circuits. The magnetization is cut off in the short-circuit region and the chokes effectively limit short circuit current. It is shown that the volume and cost of the chokes, for a logical choice of the parameters, will not exceed 25 - 30 percent of the cost of a plate transformer and the power coefficient in the normal operating region is almost unreduced.

AKSENOV, V. N.

Г. Г. Гинкин

О возможностях упорядочения системы единиц.

Л. К. Михайловский

Структурные формулы электромагнитных понятий.

III. СЕКЦИЯ ПЕРЕДАЮЩИХ УСТРОЙСТВ

Руководитель М. С. Нейман

9 июня

(с 10 до 16 часов)

М. С. Нейман

О некоторых основных вопросах развития мощных радиопередающих устройств.

√ В. В. Малинин,
К. П. Попов

Теоретическая и экспериментальная разработка импульсного усилителя звуковых колебаний мощностью 1500 вт с промышленным к.п.д. 80%.

√ В. Н. Расталин

Метод повышения пиковой и средней мощности импульсного передатчика.

9 июня

(с 18 до 22 часов)

√ Ю. В. Богословский

Анализ режима каскадов передатчика при анодной модуляции с помощью расчетных графиков.

√ Е. П. Корчагина

Об устойчивости стационарных режимов генератора с контуром между анодом и сеткой.

В. Н. Аксенов

Соотношения между уровнем фона радиопередающих устройств и уровнем пульсаций питающих напряжений.

11 июня

(с 10 до 16 часов)

√ С. И. Евтянов

Двухтактные делители частоты

В. П. Терентьев

Низовая радиосвязь с частотным разделением каналов.

report submitted for the Centennial Meeting of the Scientific Technological Society of Radio Engineering and Electrical Communications im. A. S. Popov (VNORIE), Moscow, 8-12 June. 1959

SOV/106-59-7-7/16

AUTHOR: Aksenov, V.N.

TITLE: Control Accuracy Criteria of Ionic Rectifiers

PERIODICAL: Elektrosvyaz', 1959, Nr 7, pp 45 - 51 (USSR)

ABSTRACT: Ionic rectifiers with control grids are widely used to supply radio-transmitting apparatus. Phase control is almost exclusively used since this gives more accurate "fixing" of the instant the valves are triggered than grid-bias control does. Usually, the leading edge of the triggering pulse has an arbitrary slope and is not related to the control accuracy, but the control accuracy has considerable effect on the rectifier operation, particularly on the nature and level of the background noise in the radio equipment.

Inaccurate "fixing" of the instant the valves in each phase conduct leads to instability in the rectified voltage and to the appearance in its composition of parasitic alternating components, which have random amplitudes and frequencies. It can be shown that the first harmonic of the parasitic component $f_{\Pi 1}$ is always lower than the fundamental frequency of m-phase normal pulsations,

Control Accuracy Criteria of Ionic Rectifiers SOV/106-59-7-7/16

i.e. $f \leqslant f_{\Pi 1} \leqslant mf$, where f is the frequency of the supply. The rectifier filter will have $(mf/f_{\Pi 1})^2$ times less attenuation to the parasitic frequency component than to the fundamental.
Therefore, with inexact operation of the controlled rectifier conditions arise in which the amplitude of the parasitic component at the filter output is greater than the fundamental and, consequently, this component determines the noise levels in the transmitter.
The author then investigates the connection between the level of the parasitic noise and the accuracy of the control. As a result of jitter ΔE_g in the trigger voltage, the control angle α varies within the limits $\alpha'' \leqslant \alpha \leqslant \alpha'$. This variation in control angle causes voltage instability in the rectifier output, the relative value of which is:

Card2/11

Control Accuracy Criteria of Ionic Rectifiers SOV/106-59-7-7/16

$$N = \frac{E_o' - E_o''}{E_{ocp}} = \frac{2(\cos \alpha' - \cos \alpha'')}{\cos \alpha' + \cos \alpha''} =$$

$$= 2 \ \mathrm{tg} \frac{\alpha'' + \alpha'}{2} \ \mathrm{tg} \frac{\alpha'' - \alpha'}{2}$$

(cp = mean)

where:

$$\frac{\alpha'' + \alpha'}{2} = \alpha_{cp}$$

thus,

$$N = 2\mathrm{tg}\ \alpha_{cp}\ \mathrm{tg} \frac{\alpha'' - \alpha'}{2} \qquad (1)$$

Card3/11

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000100720008-3"

and the reciprocal, the so-called control accuracy, is given by:

$$T_y = \frac{1}{N} = 0.5 \text{ ctg } \alpha_{cp} \text{ ctg } \frac{\alpha'' - \alpha'}{2} \qquad (2) .$$

Considering the worst condition, when one half of the valves working one after the other have a control angle α' and the second half, an angle α'', then the rectified voltage over the first half period of the supply voltage will have a value E'_o and over the second half period E''_o (Figure 1). The mean voltage E_{ocp} appears at the output of the filter. Superimposed on this voltage will be the usual frequency component mf and the parasitic component, the first harmonic of which will have the frequency of the supply f. The amplitude of this harmonic U_{n1} will be the first harmonic of a rectangular pulse having a height $(E'-E'')/2$ and a duration equal to half a period. Its value is determined by Eq (3). The relative level of this prasitic compoent at the filter input is:

$$K_{nl} = \frac{U_{nl}}{E_{ocp}} = \frac{2}{\pi} \frac{E_o' - E_o''}{E_{ocp}} = \frac{2}{\pi T_y} \qquad (4)$$

and at the filter output:

$$K_{n2} = \frac{K_{nl}}{q_n} \approx \frac{2}{\pi T_y} \left(\frac{f_p}{f} \right)^2$$

where:

$$q_n \approx \left(\frac{f}{f_p} \right)^2 .$$

Whence for a given K_{n2} the necessary control accuracy is:

$$T_y = \frac{2}{\pi K_{n2}} \left(\frac{f_p}{f} \right)^2 \qquad (5) .$$

A numerical example is then given.
The author next investigates graphically the slope required for the leading edge of the trigger pulse (Figure 2). Graph A shows a family of triggering curves in a co-ordinate system $u_a = f(-E_g)$. Using graph Б , on which are drawn the curves of the phase voltages $u_2 = f(\omega t)$, graph B can be constructed where the trigger characteristics (Curves 1a, 2a, 3a) are obtained in a co-ordinate system $E_g = f(\omega t)$ for a given amplitude of anode voltage U_{aM} . The bias E_{go} is chosen so that it lies below the lowest point of the trigger characteristics

$E_g = f(\omega t)$. Initially, it is assumed that a sinusoidal voltage u_g is applied to the bias and the phase of this voltage can be moved along the time axis ωt. Let the triggering characteristic be (2a) and let u_g coincide with the phase of the supply voltage u_a. The the author shows that the mean slope S_{cp} (volt/radians) of the trigger pulse over the interval $b - \iota$ (Figure 2) must be:

$$S_{cp} \approx \frac{2 \Delta E_g \operatorname{tg} \frac{\pi}{m}}{\pi K_{n2}} \left(\frac{f_p}{f} \right)^2 \qquad (10)$$

and the grid voltage amplitude U_{gM} must be:

$$U_{gM} = \frac{2\sqrt{2}\,\Delta E_g \,\mathrm{tg}\,\frac{\pi}{m}}{\pi K_{n2}} \left(\frac{f_p}{f}\right)^2 \quad (12) .$$

Numerical examples are given for $m = 3$ and $m = 6$. The values of U_{gM} obtained, 4 300 V and 1 400 V, are not acceptable in many practical cases and the use of special steep-fronted pulses, as used in many contemporary applications, is therefore fully justified. It is possible to calculate the necessary slope of the leading edge of these pulses by Eq (10). The height should be such that it overlaps the bias applied to the grid and a value $U_{gM} = (1.2 - 1.5)E_{go}$ is recommended. This value is many times less than the value required for sinusoidal waveform. To determine the duration of the trigger pulse, two practical cases are considered:

1) A simple multiphase rectifier circuit;
2) A "stage" rectifier circuit (Vologdin or Larionov circuit).

In the first case, the duration of the upper part of the pulse t_u when $u_g \geqslant |E_{go}|$ must cover only the ionization time of the valve τ_u, i.e. be not less than 10^{-6} sec. Thus, $t_u \geqslant \tau_u$ (Figure 3, Curve a).

In the second case, due to operation of two valves, successively with 60° phase change the duration of the upper part of the pulse should be greater than 60°, i.e.

$$t'_u \geqslant \frac{1}{6f} + \tau_u$$

 and the horizontal part of the pulse should not fall lower than $1.2E_{go}$ (Figure 3, Curve 6). Also when the pulse width is small, the grid of the valve is negative for a large part of the time and it suffers from ion bombardment. Thus, the optimum pulse shape during the time anode current flows is as shown in Figure 4 and:

$$t_u = 1/mf \quad \text{sec} .$$

The duration of the leading edge of the pulse can be found from:

$$t_{cp} = \frac{U_{gM}}{2\pi f S_{cp}} \quad \text{sec} .$$

The slope and duration of the trailing edge are not critical.

S/194/61/000/007/075/079
D201/D305

AUTHOR: Aksenov, V.N.

TITLE: The relationship between the background noise level of broadcasting installations and the ripple of their power supplies

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 7, 1961, 54, abstract 7 K365 (V sb. 100 let so dnya rozhd. A.S. Popova, M., AN SSSR, 1960, 294-310)

TEXT: Design formulae are derived and given for determining the allowable ripple level (at the output of the smoothing filters) of the anode and grid supply circuits, as depending on the allowable background noise in the following cases: The stages of transmitters with anode or grid modulation, intermediate HF-stages, modulated signal amplification and LF. 4 references. [Abstracter's note: Complete translation]

Card 1/1

AKSENOV, V.N.

PHASE I BOOK EXPLOITATION SOV/5135

Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi im. A.S. Popova

100 let so dnya rozhdeniya A.S. Popova; yubileynaya sessiya (One Hundredth Anniversary of the Birth of A.S. Popov; Anniversary Session) (Moscow) Izd-vo AN SSSR, 1960. 312 p. Errata slip inserted. 2,800 copies printed.

Sponsoring Agency: Akademiya SSSR.

Chief Ed.: A.L. Mints, Academician; Editorial Board: G.D. Burdun, A.R. Vol'pert, I. Ye. Gorom, L. I. Gutenmakher, I.I. Grodnev, N.D. Devyatkov, L.A. Zhekulin, S.I. Kataygev, M.S. Neyman, V.I. Siforov, and E.I. Chistyakov; Ed. of Publishing House: L.V. Gessen; Tech. Ed.: S.G. Markovich.

PURPOSE: This collection of reports is intended for scientists and technicians working in radio engineering and telecommunications.

COVERAGE: The reports included in this collection were submitted at the scientific meeting held in 1959 by the Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi im. A.S. Popova (Scientific and Technical Society of Radio

~~Card 1/7~~

Engineering and Telecommunication imeni A.S. Popov) in commemoration of the 100th anniversary of A.S. Popov's birth. Only 29 of the more than 300 reports submitted at the meeting are included. The remainder are published in the periodicals of the AS USSR, State Committees, the Ministry of Communications, and the Society imeni A.S. Popov. The book contains the reports read at plenary sessions by A.F. Shchukin, Academician, A.A. Pistol'kors, Corresponding Member, AS USSR, and E.I. Adirovich and L.I. Gutenmakher, Professors, as well as those selected as the most interesting given in the following sections by their respective chairmen: Theory of Information, Antenna Systems, Receiving Devices, Wire Communications, Television, Electronics, Radio Measurements, General Radio Engineering, Transmitting Devices, Radio Wave Propagation, Electron Microscopy, Radio Broadcasting, Electroacoustics and Sound Recording, Electronic Computer Engineering, and SHF Ferrite Devices. These chairmen were on the Editorial Board which prepared the papers for publication. References accompany most of the reports.

One Hundredth Anniversary (Cont.) SOV/5135

Kal'tsov, V.G., and A.S. Angelov. Television Receivers Using Semiconductor Devices 283

Aksenov, V.N. Relationships Between the Background Level of Broadcasting Systems and the Pulsation Level of Supply Sources 294

AVAILABLE: Library of Congress

Card 7/7

JP/dfk/gmp
5-24-61

AKSENOV, Vladimir Nikolayevich; TERENT'YEV, B.P., otv. red.; NOVIKOVÁ, Ye.S., red.; MARKOCH, K.G., tekhn. red.

[Rectifiers and transformer substations] Vypriamiteli i transformatornye podstantsii. Moskva, Gos. izd-vo lit-ry po voprosam sviazi i radio, 1961. 439 p. (MIRA 14:11)
(Electric substations) (Electric current rectifiers)

S/106/62/000/007/003/005
A055/A101

AUTHOR: Aksenov, V.N.

TITLE: Background noise level in multistage broadcasting systems

PERIODICAL: Elektrosvyaz', no. 7, 1962, 28 - 32

TEXT: In his work ["Sootnosheniya mezhdu urovnem fona radioveshchatel'nykh ustroystv i urovnem pul'satsiy pitayushchikh napryazheniy" ("Relationships between the broadcasting system background noise level and the level of pulsations of the supply voltages"), Sbornik "100 let so dnya rozhdeniya A.S. Popova", izd. AN SSSR, 1960], the author deduced the relationships between the background noise level of the most widely used broadcasting systems and the level of the pulsations of the voltages applied to these systems, which were supposed to be single-stage systems. In the present article, he deduces analogous relationships for multistage systems. For two or more noncorrelated sources of background noise, their combined effect on the examined stage can be estimated with the aid of the formula giving the rms value of the resultant background noise voltage

Card 1/3

g

(1

-lationships

-ive:

and

$$\ldots_{backgr\ 1} + K_{backgr\ 2}\ , \qquad (3)$$

-ces:

Card

$$0 \leq K_{backgr} \leq \sum_{i=1}^{n} K_{backgr\ i}\ . \qquad (4)$$

Background noise.....

S/106/62/000/007/003/005
A055/A101

In the above mentioned work, the coefficients $K_{backgr\ i}$ were determined as functions of the pulsation coefficients of anode and grid voltages. No satisfactory method exists as yet for calculating the dependence of K_{backgr} on the heating circuit conditions, but experimental data are available for tungsten-cathode tubes, that permit the determination of the coefficient of the background noise in the anode circuit if the heating conditions are known. A table containing these data is reproduced in the article. The author deduces next a formula giving the resultant K_{backgr} in the case of a multistage l-f amplifier. A numerical example - calculation of the resultant K_{backgr} in the case of a three-stage modulator with tungsten triodes - is given at the end of the article. There are 1 figure and 1 table.

SUBMITTED: March 27, 1962

Card 3/3

122-57-8-17662

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1957, Nr 8, pp 255-256 (USSR)

AUTHOR: Aksenov, V. P.

TITLE: On the Design of a Parallel Balanced DC Voltage Amplifier (K raschetu parallel'nogo balansnogo usilitelya postoyannogo napryazheniya)

PERIODICAL: Tr. Mosk. energ. in-ta (Transactions of the Moscow Power-Engineering Institute), 1956, Nr 18, pp 344-358

ABSTRACT: Design formulae are presented for determining anode currents in a symmetrical parallel balanced DC-amplification stage; the formulae allow for variations in tube parameters and in load resistances of both halves of the stage. Equations of the differential amplification factor and the level-amplification factor are given; a numerical example of amplifier design having 3 parallel balanced stages is presented.

A. A. S.

Card 1/1

AKSENOV, V. P., Candidate of Tech Sci (diss) -- "Investigation of the assembly of instruments for dynamic impulse testing of receiver amplifier tubes." Moscow, 1959. 16 pp (Min Higher Educ USSR, Moscow Order of Lenin Power Engineering Inst), 150 copies (KL, No 22, 1959, 113)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000100720008-3"

AKSENOV, V.P.

3

Aksenov, V. P., Zamorenov, N. P., and Rybkin, A. D.: Razrabotka burykh uglei Ukrainy (The Processing of Ukrainian Brown Coals). Kiev: Gosudarst. Izdatel. Tekh. Lit. Ukr. S.S.R. 1955. 251 pp.

AKSENOV, V. P.

AKSENOV, V. P.: "The investigation of the technique of operation of bank bridges with fan-shaped and parallel location of the cutting face (under conditions of the brown-coal open-pit mines of the Ukraine)." Min Higher Education Ukrainian SSR. Kiev Order of Lenin Polytechnic Inst. Chair of Working of Deposits of Useful Materials. Kiev, 1956. (Dissertation for the Degree of Candidate in Technical Sciences)

So: Knizhnaya letopis' No 38, 1956. Moscow

AKSENOV, V.P., kand.tekhn.nauk; ORZHEKHOVSKAYA, L.M., inzh.

Methods for substantiating parameter determination of open-pit mining equipment with continuous action. Ugol' Ukr. 3 no.6: 44 Je '59. (MIRA 12:11)

1. Kiyevskiy politekhnicheskiy institut (for Aksenov). 2. Ukrgiproshakht (for Orzhekhovskaya).
(Mining machinery)

AKSENOV, V.P., kand.tekhn.nauk; SHPEKTOROV, Yu.Z., inzh.

Evaluating the effectiveness of open-pit mining of the Stebnik deposit of potassium salts. Nauch. zap. Ukrniiproekta no.2:92-98 '60. (MIRA 15:1)

(Ukraine--Potassium salts)

AKSENOV, V.P., kand.tekhn.nauk; MEL'NIK, N.A., inzh.

Establishing the optimum length of the front of an open pit when using conveyer haulage of the overburden. Nauch. zap. Ukrniiproekta no.2:109-117 '60. (MIRA 15:1)

(Conveying machinery)

ZHERBIN, M.M., kand.tekhn.nauk; NINIDZE, K.K., gornyy inzhener; AKSENOV, V.P., kand.tekhn.nauk; DUKHOVNYY, S.D., gornyy inzhener

Urgent tasks in the field of open-pit mining of mineral deposits in the Ukraine. Ugol' Ukr. 5 no.11:30-33 N '61. (MIRA 14:11)

1. UkrNIIproyekt.
(Ukraine--Mines and mineral resources) (Strip mining)

AKSENOV, V.P., kand.tekhn.nauk; TSIVILEV, V.A., inzh.; BUDYKA, V.I., inzh.

Analysis of the present state of and outlook for quarrying building materials in the Ukraine. Nauch.zap.Ukrniiproekta no.5:89-95 '61. (MIRA 15:7)
(Ukraine--Quarries and quarrying)

AKSENOV, V.P., kand.tekhn.nauk; MEL'NIK, N.A., inzh.

Establishment of an efficient annual rate of production in manganese pits of the Nikopol' deposit. Nauch.zap.Ukrniiproekta no.5:96-104 '61. (MIRA 15:7)
(Nikopol' region--Strip mining)

AKSENOV, V. P., kand. tekhn. nauk

Determining the weight characteristics of continuous mine transportation equipment and efficient mine parameters in using it. Sbor. trud. MISI no.39:285-287 '61. (MIRA 16:4)

1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut ugol'noy, rudnoy, neftyanoy i gazovoy promyshlennosti.

(Ukraine—Mine haulage)

AKSENOV, V. P., kand. tekhn. nauk; BELYAKOV, Yu. I., kand. tekhn. nauk; KONONENKO, A. A., inzh.

Continuous action equipment complex for open-pit mining. Ugol' Ukr. 6 no.10:22-25 O '62. (MIRA 15:10)

(Coal mining machinery) (Strip mining)

IVONIN, Ivan Pavlovich; DAVYDOV, Viktor Viktorovich; ZORIN, Leonid Fedorovich; IVANNIKOV, Ivan Andreyevich; AKSENOV, V.P., kand. tekhn. nauk, retsenzent; BYKHOVSKAYA, S.N., red. izd-va; MAKSIMOVA, V.V., tekhn. red.

[Open pit mining of native sulfur deposits] Otkrytaia razrabotka mestorozhdenii samorodnoi sery. Moskva, Gosgortekhizdat, 1963. 303 p. (MIRA 17:1)
(Sulfur mines and mining) (Strip mining)

AKSENOV, V.P., kand.tekhn.nauk; BELYAKOV, Yu.I., kand.tekhn.nauk; PINCHUK, A.N., inzh.

Prospects for using continuous equipment in open pits of the U.S.S.R. Gor.zhur. no.2:10-13 F '63. (MIRA 16:2)

1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut ugol'noy, rudnoy, neftyanoy i gazovoy promyshlennosti, Kiyev.
(Strip mining—Equipment and supplies)

RODIONOV, G.V., doktor tekhn.nauk; AKSENOV, V.P., kand.tekhn.nauk; VLADIMIROV, V.M., kand.tekhn.nauk; PRISEDSKIY, G.V., inzh.

Recent trends in developing highly efficient excavators and loaders. Gor.zhur. no.2:43-46 F '63. (MIRA 16:2)

1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut ugol'noy, rudnoy, neftyanoy i gazovoy promyshlennosti, Kiyev (for Prisedskiy).

(Excavating machinery) (Mining machinery)

BUYANOV, Yuriy Dmitriyevich, kand. tekhn. nauk; AVERCHENKOV, Anatoliy Pavlovich, gornyy inzh.; BESSMERTNYY, Konstantin Sergeyevich, gornyy inzh.; AKSENOV, V.P., kand. tekhn. nauk, retsenzent; BELYAKOV, Yu.I., kand. tekhn. nauk, retsenzent; GEYMAN, L.M., red.izd-va; LAVRENT'YEVA, L.G., tekhn. red.

[Sand, gravel, crushed stone and clay quarries] Peschano-graviinye, shchebenochnye i glinianye kar'ery. Moskva, Izd-vo "Nedra," 1964. 358 p. (MIRA 17:3)

AKSENOV, V.P., kand. tekhn. nauk; BELYAKOV, Yu.I., kand. tekhn. nauk

Mine transportation equipment of continuous operation used in strip mine construction. Shakht. stroi. 7 no.3:6-11 Mr'63
(MIRA 17:7)

1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut ugol'noy, rudnoy, neftyanoy i gazovoy promyshlennosti UkrSSR.

AKSENOV, V.P.; ROZENPLENTER, A.E., kand. tekhn. nauk; CHERNYAVSKIY, A.T.

Efficient correlation between the height of the top and bottom scooping of rotary excavators. Met. i gornorud. prom. no.2:67-69 Mr-Ap '65. (MIRA 18:5)

LEPILKIN, N.M., inzh.; AKSENOV, V.P., kand. tekhn. nauk; KUKHARCHUK, N.N., inzh.; KABYSH, V.L., inzh.; LYALIN, Yu.K., inzh.

Method of laying out quarries for the quarrying of rock products. Gor. zhur. no.6:53-55 Je '65. (MIRA 18:7)

1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut ugol'noy, rudnoy, neftyanoy i gazovoy promyshlennosti UkrSSR, Kiyev.

L 16069-66 EWT(1)/ETC(f)/EPF(n)-2/EWG(m) IJP(c) GS/AT

ACC NR: AT6004495 SOURCE CODE: UR/0000/65/000/000/0233/0237

AUTHOR: Aksenov, V. P.; Blinov, L. M.; Marin, V. P.; Polak, L. S.; Shchipachev, V. S.

ORG: none

86 84 B+1

21,44,55

TITLE: An ultra-high frequency plasma generator and some of its possible applications in chemistry

SOURCE: AN SSSR. Institut neftekhimicheskogo sinteza. Kinetika i termodinamika khimicheskikh reaktsiy v nizkotemperaturnoy plazme (Kinetics and thermodynamics of chemical reactions in low-temperature plasma). Moscow, Izd-vo Nauka, 1965, 233-237

TOPIC TAGS: high energy plasma, plasma device, plasma generator, nitric oxide, plasma chemistry, UHF, plasma diagnostics, luminescence, spectrographic analysis

ABSTRACT: It is indicated that UHF plasma discharge at above atmospheric pressures may become an important tool in chemical technology since it permits carrying out chemical reactions at lower temperatures and pressures than would be necessary in the case of the corresponding catalytic processes. The UHF plasma generator set-up is shown in fig. 1. The basic advantage of the UHF plasma generator, from the

Card 1/2

L 16069-66

ACC NR: AT6004495

2

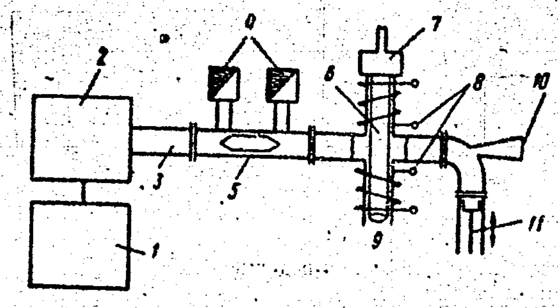


Fig. 1. 1--modulator; 2--magnetron; 3--wave guide 72 × 34 mm^2; 4--calorimetric power (load) meters; 5--ferrite circulator; 6--discharge tube; 7--point of tangential air inlet; 8--selenoid; 9--point of introduction of gases; 10--plasma diagnostic observation window; 11--adjustible plunger.

standpoint of chemical technology, is the possibility of controlling the reaction temperature in a wide range, thus affecting both reaction rate and chemical equilibrium. The plasma temperature can be measured optically with great accuracy by means of an ICP-28 spectrograph located perpendicular to the plasma motion axis. Plasma luminescence intensity is measured at a distance of 5 cm from the plasma active discharge zone. The dependence of the nitric oxide yield generated from air in the UHF plasma unit at 0.8 megawatt pulse power and air flow rate of 8 l/min is graphed. Orig. art. has: 2 figures.

SUB CODE: 07, 20/ 10/ SUBM DATE: 08Jul65/ ORIG REF: 003/ OTH REF: 001

Card 2/2

L 39042-66 EWT(l)/EWP(e)/EWT(m)/T/EWP(j) IJP(c) WW/WE/GG/AT/RM/WH

ACC NR: AR6022896 SOURCE CODE: UR/0081/66/000/005/I012/I012

AUTHOR: Aksenov, V. P.; Hlinov, L. M.; Marin, V. P.; Polak, L. S.; Shchipachev, V. S.

54
B

TITLE: SHF plasmatron and some possible areas of its application in chemistry

25

SOURCE: Ref. zh. Khimiya, Part II, Abs. 5I101

REF SOURCE: Sb. Kinematika i termodinamika khim. reaktsiy v nizkotemperaturn. plazme, M., Nauka, 1965, 233-237

TOPIC TAGS: plasmatron, SHF, chemical synthesis, ionizing ~~radiation~~ irradiate

19

ABSTRACT: It is shown that by using the ionizing effect of SHF radiation one can carry out the following processes: synthesis of ammonia, recovery of nitrogen oxides from air (in the production of nitric acid); synthesis of hydrochloric acid, hydrocyanic acid; recovery of sulfur from hydrogen sulfide and flue gases; petroleum cracking; preparation of acetylene from methane; production of alcohols; chlorination, nitration, hydroxylation, carboxylation reactions; synthesis of benzene, biphenyl, phenol; polymerization of ethylene into polyethylene; preparation of pyroceramics; preparation of ultrapure films and metals. A diagram of the pulsed SHF device is given, and certain characteristics of the SHF discharge are described. Results of measurements of the temperatures and concentrations of electrons and ions in the SHF discharge and of preliminary experiments on the formation of nitrogen oxides in the SHF plasmatron are given. G. L. [Translation of abstract]

SUB CODE: 07

Card 1/1

L 17738-63 EWT(1)/EWP(q)/EWT(m)/BDS AFFTC/ASD/SSD Pq-4 WH

ACCESSION NR: AP3007174 S/0072/63/000/009/0015/0016

AUTHOR: Lipchanskaya, R. V. (Engineer); Aksenov, V. S. (Engineer)

TITLE: Effect of uniform heating rate on the thermoluminescence of glass

SOURCE: Steklo i keramika, no. 9, 1963, 15-16

TOPIC TAGS: glass, silicate glass, cerium, cerium containing silicate glass, thermoluminescence, glow curve, irradiation, x-ray, heating rate, irradiated glass

ABSTRACT: The thermoluminescence of a cerium-containing silicate glass (53.6% SiO_2, 15.01% B_2O_3, 19.01% BaO, 5.6% K_2O, 2.4% Na_2O, 3.5% ZnO, 0.5% Sb_2O_3, 0.3% CeO_2) has been studied by the glow-curve method. This method can also be used to develop formulations for glass which would not exhibit thermoluminescence after irradiation with hard rays. Samples of the glass were irradiated with x-rays and then heated steadily to 350C at rates varying from 2 to 50C/min. A photomultiplier, a cathode follower, and a recording

Card 1/2

L 17738-63

ACCESSION NR: AP3007174

potentiometer were used. Readings were taken at regular intervals and plotted as the glow curves shown in Fig. 1 of the Enclosure. It was concluded that heating rate significantly affects the thermoluminescence intensity, the optimum rate being 20—30C/min. Orig. art. has: 1 figure.

ASSOCIATION: Saratovskiy filial Instituta stekla (Saratov Branch, Institute of Glass)

SUBMITTED: 00	DATE ACQ: 30Sep63	ENCL: 01
SUB CODE: PH	NO REF SOV: 003	OTHER: 000

Card 2/2

ACCESSION NR: AR4048477

[illegible] glasses differ in light transmissibility [illegible]

ASSOCIATION: none

SUBMITTED: [illegible] ENCL: [illegible]

NO REF SOV: 000 OTHER: 000

Card 2/2

LIPCHANSKAYA, R.V., inzh.; AKSENOV, V.S., inzh.

Effect of the speed of uniform heating upon the character of thermal scintillation of glass. Stek. i ker. 20 no.9:15-16 S '63. (MIRA 17:6)

1. Saratovskiy filial Gosudarstvennogo nauchno-issledovatel'skogo instituta stekla.